

## **REMARKS**

### **I. Claim Status**

Claims 12 and 37-45 are currently pending, and stand rejected. Claims 12, and 37-45, have been amended. New claims 46-50 have been added.

Claims 12, and 37-45 have been amended to refer to a polymer electrolyte fuel cell. Support for this amendment comes from the Specification as filed at paragraph [0011].

New claims 46-50 find support from the Specification as filed. Support for claims 46-49 comes from Figure 1 and the recitations at paragraphs [0001]-[0025] of the Specification as filed. Support for claim 50 comes from Example 41 of the Specification as filed.

No new matter has been added.

### **II. Claim Rejections**

#### **a) 35 U.S.C. § 103(a)**

Claims 12, 37, 39, 40, and 43-45 stand rejected as obvious in view of WO 97/43457 (“ ‘457 ”). The Examiner contends that ‘457 discloses a hanger made from a nickel base alloy with a composition overlapping the instant claimed ranges. The Examiner contends that with respect to claim 12, the compositions allegedly disclosed by ‘457 overlap the instant claimed ranges. The

Examiner concludes that a *prima facie* case of obviousness exists because it would have been obvious to include between 43 and 50% Cr in the alloy of '457 since '457 discloses equal utility over the broader range of 38-75%.

Regarding claim 45, the Examiner contends that a *prima facie* case of obviousness exists where the claimed ranges and the prior art ranges do not overlap but are close enough that they would be expected to have the same properties.

The Examiner further contends that, regarding the limitation of a wrought nickel alloy in claims 12 and 43, the determination of patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same or obvious from a product of the prior art, then the claim is unpatentable, even though the prior product was made by a different process.

The Examiner also contends that claims 37, 39, and 40 are obvious over '457. The Examiner concedes that '457 does not teach the use of the alloy in a polymer electrolyte fuel cell; however, statements of purpose or intended use in the preamble are evaluated to determine whether the recited purpose or intended use results in a structural difference. The Examiner further contends that the hanger disclosed in '457 is used for supporting pipes and other elements, and is therefore a structural member and a pipe member. The Examiner concludes that it would have been obvious to fabricate

the screws, bolts, or pins (fasteners) from an alloy allegedly disclosed in '457, since '457 teaches all components can be fabricated from this material for corrosion-resistance. The Examiner further states that in the instant claim 44, the hanger of '457 reads on a structural member. Applicants respectfully traverse.

Without conceding the correctness of the Examiner's position or the need for amendment, claim 12 of the present application has been amended to call for a polymer electrolyte fuel cell including a member made of a nickel-base wrought alloy. The polymer electrolyte fuel cell of claim 12 reads in part:

- (I) the polymer electrolyte fuel cell including
  - (i-1) a member made of a nickel-base wrought alloy;
- (II) the nickel-base wrought alloy comprises, by mass
  - (ii-1) more than 43% and not more than 50% chromium
  - (ii-2) 0.1 to 2% molybdenum
  - (ii-3) 0.001 to 0.05% magnesium
  - (ii-4) 0.001 to 0.04% nitrogen
  - (ii-5) 0.05 to 0.5% manganese
  - (ii-6) 0.05 to 1.0% iron
  - (ii-7) 0.01 to 0.1 % silicon
  - (ii-8) the balance being nickel and inadvertent impurities

(ii-9) the amount of carbon included in the alloy as inadvertent impurities being not more than 0.05%.

The '457 reference does not disclose, suggest, or provide a motivation to make a polymer electrolyte fuel cell comprising a member made of a nickel-base wrought alloy as described in instant claim 12. Rather, the '457 reference discloses a hot-corrosion-resistant material and a hanger used for a combustion chamber in a combustion plant, which is unlike the present invention. The hot-corrosion-resistant material is intended to be used in combustion plant wherein heating is conducted at 550 to 1,000°C. Furthermore, the '457 reference indicates that "a hot-corrosion-resistant material" means a material which is resistant to corrosion in the environment which exists in a combustion chamber at an operating temperature ranging from 550 to 1,000°C. The '457 reference also discloses that nickel- and chromium-containing alloys with a high content of chromium have good resistance to hot corrosion, but that such alloys become very hard and thus brittle at temperatures exceeding 550°C, such that a face made of such an alloy, when the face is used for a hanger, will often crack to expose a subjacent load-bearing material of a hanger, and the load-bearing material of a hanger then being eroded away by the corrosive environment.

The '457 reference discloses a hot-corrosion-resistant material having a low hardness or low susceptibility to brittleness, which would prevent the formation of cracks as described above. The '457 reference also describes that its hot-corrosion-resistant material retains a high tensile strength

combined with high ductility, and further describes a hanger wherein such a hot-corrosion-resistant material is used on the surface of the hanger. Accordingly, the purpose of the invention of the '457 reference is different from that of the present invention.

The '457 reference therefore does not disclose, suggest or provide a motivation to make a polymer electrolyte fuel cell or members used therein. Additionally, the '457 reference does not disclose corrosion resistance which is required when members of the polymer electrolyte fuel cell come into contact with water, which is mildly corrosive at low temperatures ranging from room temperature to 80°C. Nor does the '457 reference disclose any members which contact water at all during their use. In such a high-temperature environment as disclosed by the '457 reference, water evaporates and cannot be maintained in its liquid phase. Thus, reconsideration and withdrawal of this rejection is respectfully requested.

Claims 12, and 38-45, stand rejected as being obvious over EP 0 303 957 (" '957 ") in view of '457. The Examiner contends that '957 discloses that 0.3 wt% or less Fe may be included as impurity which overlaps the claimed range of between 0.05 to 1.0 wt%, and is therefore *prima facie* obvious. The Examiner does admit that '957 does not disclose the inclusion of between 0.01 to 0.1 wt% Si. The Examiner further contends that '457 allegedly discloses that up to 0.95 wt% Si can be beneficially added to improve corrosion resistance. The Examiner concludes it would have been

obvious to add up to 0.95 wt% Si as taught by '457 to the alloy of '957, to improve corrosion resistance as allegedly taught by '457 and as desired in '957. Applicants respectfully traverse.

Applicants reiterate their previous arguments regarding the '457 reference. The '957 reference, either alone or in combination, does not disclose or suggest or provide a motivation to make a polymer electrolyte fuel cell comprising a member of a nickel-base wrought alloy as described in instant claim 12. Reconsideration and withdrawal of the rejection is respectfully requested.

**b) Non-Statutory Obviousness-Type Double Patenting**

Claim 12 is provisionally rejected on the grounds on non-statutory obviousness-type double patenting in view of claims 1 and 2 of co-pending application 10/501,100. Owing to the amendments to claim 12, it is argued that the instant claim 12 is not obvious in view of pending claims 2 of co-pending application 10/501,100. (Claim 1 appears to have been cancelled.) Thus, reconsideration and withdrawal of this rejection is respectfully requested.

**CONCLUSION**

In view of the foregoing amendments and remarks, applicant believes the pending application is in condition for allowance, and earnestly solicits same.

If the Examiner believes that any remaining issues can be resolved by a Supplemental Amendment or an Examiner's Amendment, the Examiner is invited to contact the undersigned, at the telephone number indicated below.

Dated: April 18, 2008

Respectfully submitted,

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